Fungal mycelia as the source of chitin and polysaccharides and their applications as skin substitutes

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摘要

Abstract

A wovenable skin substitute (Sacchachitin) made from the residue of the fruiting body of Ganoderma tsugae was developed in this study. Chemical analysis revealed that the treated residue was a copolymer of beta-1,3-glucan (ca 60%) and N-acetylglucosamine (ca 40%) with a filamental structure of mycelia form, as demonstrated by both optical and scanning electron microscopy. The pulp-like white residue was then woven into thin, porous sheets 7.0 cm in diameter and 0.1-0.2 mm in thickness by filtration and lyophilized for use as a skin substitute. The wound area produced by dissecting rat skin of full thickness was found to almost completely heal on the side covered with Sacchachitin, whereas the control side covered with cotton gauge was around 6.0 cm2 on the 28th day. Furthermore, the wound healing effects of the chitin sheet from crab shell (Beschitin) and Sacchachitin were not found to be significantly different.